Claims

1. An immunocompromised transgenic rodent which expresses a first fluorescent protein in essentially all tissues while maintaining its immunocompromised phenotype.

2. The rodent of claim 1 which is a mouse.

3. The mouse of claim 2 which is a *nu/nu* mouse.

4. The rodent of claim 1 transplanted with heterologous tissue, said tissue modified to express a second fluorescent protein with a different emission spectrum from the first fluorescent protein.

5. The rodent of claim 4 wherein the first fluorescent protein is green and the second fluorescent protein is red.

6. The rodent of claim 4 wherein said heterologous tissue comprises tumor cells.

7. The rodent of claim 6 wherein said tumor cells are transplanted orthotopically into said rodent.

8. The rodent of claim 7 wherein said tumor cells are an intact segment of a tumor.

9. A method to assay the effects of a drug on tumor-host interactions comprising contacting the rodent of claim 6 with said drug, imaging tumor-host cell interactions by observing emissions of said first and second fluorescent proteins, and comparing the resulting images to a rodent not contacted with said drug.

10. The method of claim 9 wherein said observing is by whole-body imaging of the living intact animal.

11. A transgenic rodent that expresses a gene encoding a first fluorescent protein in essentially all tissues and which has been transplanted by heterologous tissue that expresses a

second fluorescent protein having a different emission spectrum from said first fluorescent protein.

12. The rodent of claim 11 that is a mouse.

13. The rodent of claim 11 wherein the first fluorescent protein is green and the second fluorescent protein is red.

14. The rodent of claim 11 wherein the heterologous tissue comprises syngeneic tumor cells.

15. The rodent of claim 14 wherein said tumor cells are transplanted orthotopically into said rodent.

16. The rodent of claim 15 wherein said tumor cells are an intact segment of a tumor.

17. A method to assay the effects of a drug on tumor-host interactions comprising contacting the rodent of claim 11 with said drug, imaging tumor-host cell interactions by observing emissions of said first and second fluorescent proteins, and comparing the resulting images to a rodent not contacted with said drug.

18. The method of claim 17 wherein said observing is by whole-body imaging of the living intact animal.

19. A method of propagating cells or tissue that express a first fluorescent protein comprising isolating tissues from the rodent of claim 1 and transplanting them into another animal or embryo.

20. The method of claim 19 further comprising serial re-isolation and re-transplantation of the tissues into another animal or embryo.